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AUTHOR Torrez, Nena
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ABSTRACT

This paper explains how educational technology and multimedia materials can enhance teaching and learning for today's diverse students. The United States still carries the Puritan influence in education (attempting to build a single culture), with little recognition of the need to address diversity in California's K-12 classrooms. Recently, California legislative mandates developed a policy of banning curriculum materials in Spanish, yet in over half of all California school districts, 20 percent of students are non-English speakers. Data on changing ethnic compositions and achievement scores show that discrimination has not disappeared. Teachers must understand and recognize the prejudicial myths and stereotypes embodied in the dominant U.S. culture. A significant impediment to multiculturalism is the dysconscious racism that still lingers in the dominant culture. It is important to investigate different cultures to get away from negative stereotypes. Multimedia and computer technologies provide the capacity for presentations with high-tech graphics and engaging interactivity. Teacher training can focus on relatively low-cost, new multimedia technologies to enhance learning. Multimedia instructional materials address different learning styles and allow congruence and cultural consonance with learning styles. Modern technology can enhance the social construction of knowledge. (SM)

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DEVELOPING CULTURALLY CONSONANT CURRICULUM USING THE TECHNOLOGY OF THE NEW MILLENNIUM

DR. NENA TÓRREZ
ASSISTANT PROFESSOR
CALIFORNIA STATE UNIVERSITY SAN BERNARDINO

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Developing Culturally Consonant Curriculum
Using the Technology of the New Millennium

Schools have been the primary vehicle for Americanization . Technology is helping to drive this learning process. Schools continue to be the main instrument used to enculturate children into a White Anglo-Saxon Protestant (WASP) community. It is also the way we aculturate children who do not share this heritage. The central aim of schooling today retains much of its focus from the originating from the Puritan perspective. This was the dominant view in the United States from 1647 to around 1879. Pai and Adler (1997).

Schooling , today, for many educators still means Americanization. Schooling means explicitly fostering conformity to the dominant culture and hostility toward cultural diversity. This specific mission statement has its roots in the Puritans' view of their destiny and mission in life. Cultural diversity was seen as detrimental to the national unity, and a society of one class, or **common culture.** The Puritan schooling agenda is still active in trying to build a single culture, the WASP culture, in America. A logical consequence of this approach is that it fosters intolerance and hostility toward diversity, and leads to the implicit rejection of different cultural heritages.

With the dawn of a new century, we still carry the Puritan influence in education, stemming from the 1700's. There is still little recognition of the need to address diversity in the K-12 classroom in California. Recently, California legislative mandates have developed a policy of banning curriculum materials in Spanish. Yet, in over half of all California school districts, 20 percent of the children entering kindergarten are non-English speakers . Keeping America American (English only) carries with it the implicit

assumption that if minority groups conform to WASP norms, then prejudice and discrimination will disappear.

However, data on the changing ethnic composition and achievement scores shows that discrimination has not disappeared. One would think that the Americanization process, if effective, would lead to a roughly equal eligibility percentage for all ethic groups coming from high schools to the California State college system (i.e., meeting eligibility criterion for California State Universities and the University of California schools).

The tables below show the rapid pace of demographic transitions in California Public Schools. The changes in ethnicity over the past decade exhibit a pattern that will be followed by the rest of the United States, over the next century. It is particularly disturbing to see that increasing diversity displayed in table1 and table 2, is not being complemented with a even distribution of achievement in acquisition of eligibility to college, as shown in table 3. The tables show that, currently, Hispanics are the largest percentage ranked by ethnicity in public schools. Yet, the University of California reports that the current completion rate of Hispanic students is only 5 percent. These results show that Americanization as Anglo-conformity is not working.

Table 1

1987 California K-12

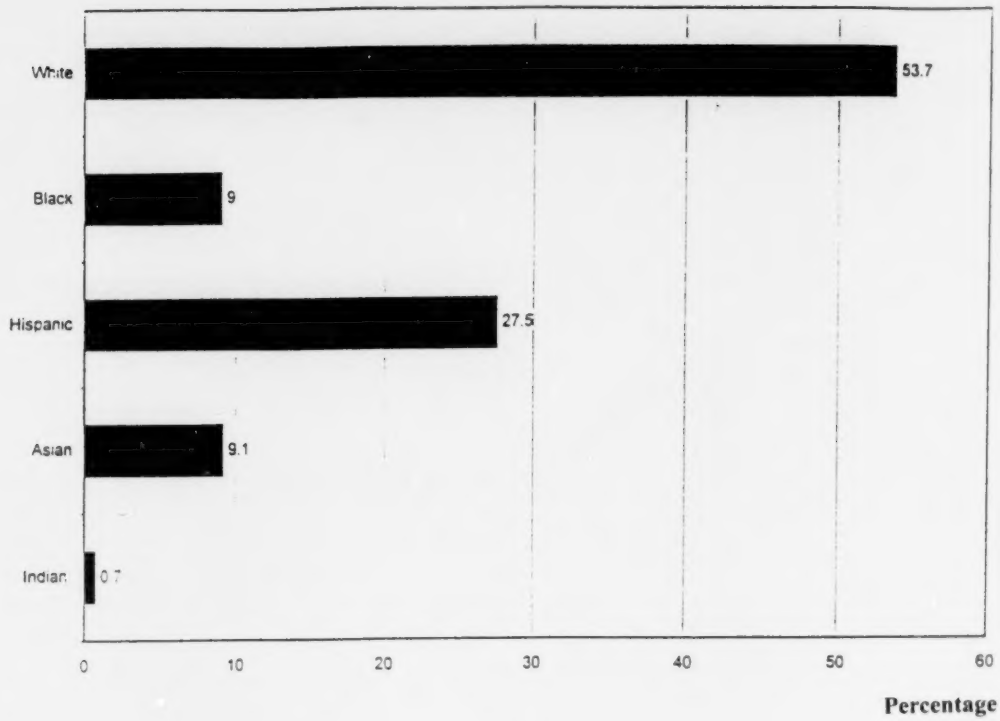

Table 2

1996 California K-12

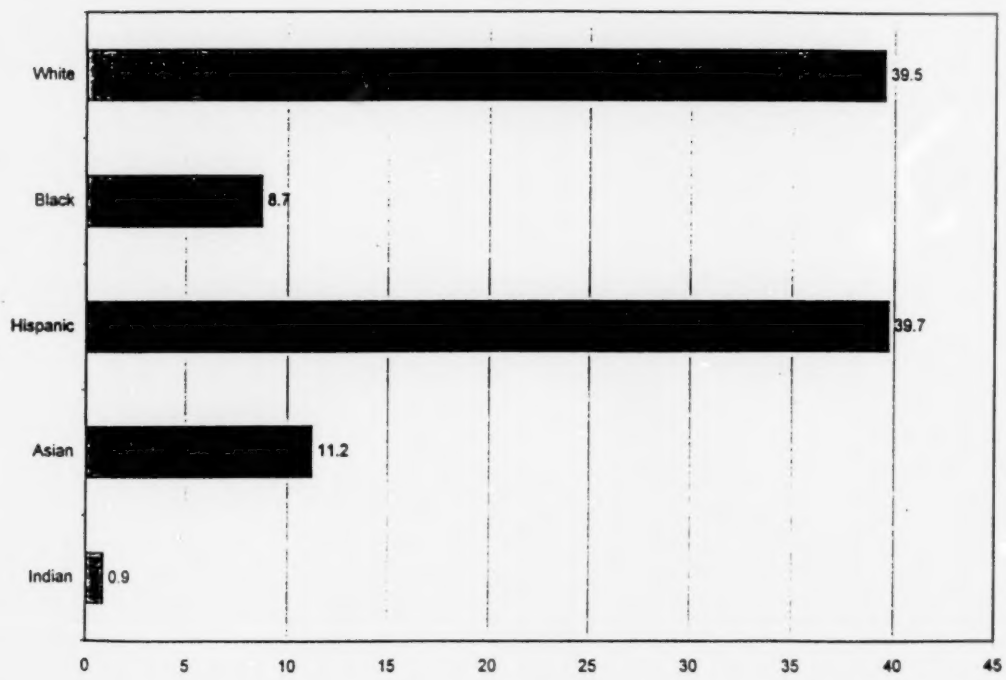

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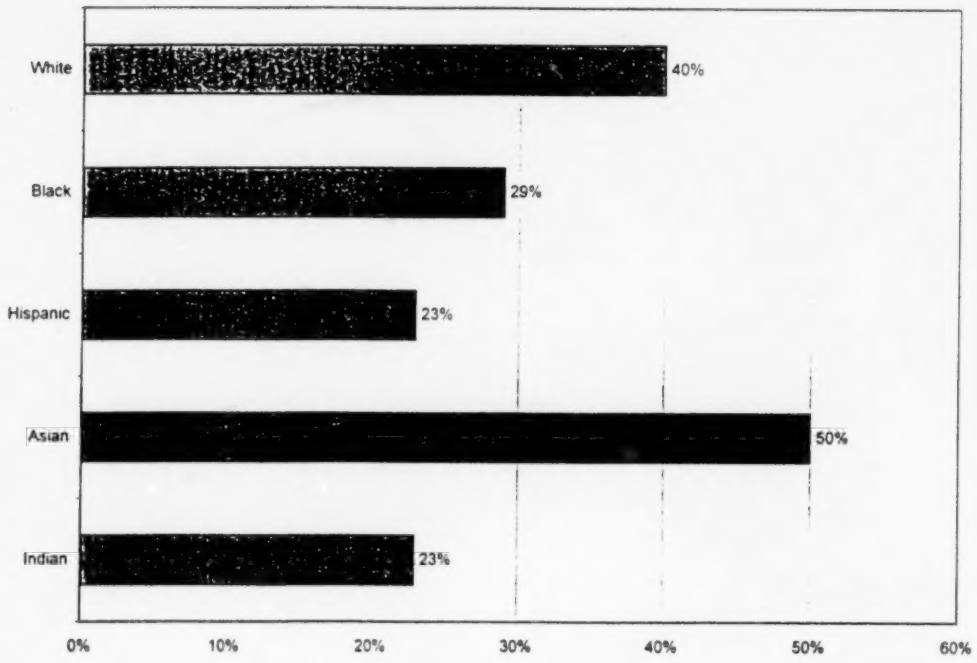
Table 3

% of 12th Graders Meeting State College Requirements



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It is important that teachers understand and recognize the prejudicial myths and the stereotypes embodied in the dominant culture o f America. Important contributions by authors such as Jackson (1999) make it plain that, as we enter the new millennium, new possibilities for multiculturalism face obstacles. The most significant impediment is the "dysconscious racism" that still lingers in the dominant culture as outlined in King (1991). The literature on these problems is an essential first step in forging a truly multicultural society. In the next century, it is imperative that we dispel the negative stereotypes of the "other" cultures.

While overcoming negative, prejudicial stereotypes is an almost self-evident prerequisite to the multicultural classroom, there is an "operational paradox" at work. Many teachers recognize the need to bring culturally relevant materials into the classroom. However, in practice, there are some logistical problems. In some cases, there is a lack of relevant material for a given cultural group. Even in cases where materials are available, there may be a lack of funds. For example, in California elementary schools, recent legislation has severely limited the availablity of funding for multicultural materials (especially bilingual resources).

Using New Technology to Shape the New Cultural Consonance

It is important that we investigate different cultures in order to get away from stereotypical images that are often negative. Multimedia and computer technologies provide the capacity for presentations with dazzling graphics and engaging interactivity. Teacher training now has an opportunity to focus on relatively low cost, new multimedia

technologies. Such "edutainment" tools are potent forces in the lives of children. If harnessed properly, the new media can enhance the drive to learn, provide students with access to a rich diversity of information and ideas, and enable them to reach across community and cultural borders. But there is also peril: video game channels, virtual shopping malls, and manipulative forms of advertising targeted at children could further compound the problems in the existing media that have troubled parents, educators, and child advocates for decades. The rich content of the World Wide Web, provides the possibility of using multimedia as a positive force for discovering the advantages of our multicultural heritage in America.

In Frames of Mind (1983), Gardner first set forth his influential theory of Multiple Intelligences, contending that each of us is equipped with eight or more separate types of intelligence (including linguistic, logical-mathematical, musical, bodily-kinesthetic, spatial, interpersonal and intrapersonal varieties). Recently, Gardner added to the list a new naturalistic intelligence, which involves attunement to the environment, its flora and fauna. We are aware that such assertions await scientific verification. However, Gardner (1983) argues that accumulating neurological evidence supports MI theory, and cites a study by Harvard Project Zero (of which he is co-director) reporting that schools across the U.S. applying MI theory boast improved student performance and parent participation. Linked to these findings, Gardner (1983) outlines an important educational approach: individually configured education, tailored to individual differences.

Multimedia Instructional Materials Address the Different Styles of Learners

Multimedia provides an educational approach that pays attention to the existence of multiple intelligence (MI), and is, therefore, going to be more effective than an approach that ignores this. Expressed at this level of generality, Gardner's theory is one with which few people could disagree. But the purpose of Frames of Mind was to identify seven specific "intelligences," and that list forms the basis of all the educational applications of MI. Gardner argued against the view of intelligence as a single faculty that is accurately measured by an IQ test. Rather, he said, we have several separate intellectual capacities, each of which deserves to be called an intelligence. The seven intelligences are linguistic, musical, logical-mathematical, spatial, bodily-kinesthetic, interpersonal (the ability to understand others) and intrapersonal (the ability to understand oneself). More recently, Gardner has added a "naturalist" intelligence (as discussed above). It is worth defining Gardners's original seven types of intelligences briefly, as follows:

1. MUSICAL The ability to discern meaning in rhythmically arranged sets of pitches--and to reproduce them
2. LOGICAL-MATHEMATICAL Skill with numbers and a fascination with their patterns and operations; scientific ability; formal reasoning
3. LINGUISTIC Skill with words characterized by a sensitivity to their meaning, order, function, sound and rhythm
4. SPATIAL The capacity to perceive the world accurately and to manipulate these perceptions mentally
5. BODILY-KINESTHETIC The ability to use the body in highly differentiated and skilled ways for expressive and goal-directed purposes
6. INTRAPERSONAL The capacity to discriminate among and understand one's own feelings and to draw upon them in guiding one's behavior
7. INTERPERSONAL The ability to make distinctions among other individuals especially their moods, intentions and motivations.

The main advantage of the new technology is that this medium captures important cultural communication, or presentation in a real setting and captures it with technologies that can be replayed and rerun as many times as desired, for the same audience, or for different audiences (creating multimedia rich and culturally rich environments).

Multimedia Allows Congruence and Cultural Consonance with Learning Styles

There is a voluminous literature on the concept of the "zone of proximal development," as initiated by Vygotsky (1962). Analogous to this concept, there is a "**zone of cultural consonance**." Multimedia allows a teacher to tap into the "cultural capital" of the children in the classroom who have a common cultural heritage. If there are people in the local community with whom children share a common cultural background, multimedia allows these persons' shared experiences to be captured in video, and their words to be played back many times, for many audiences. Given its potential benefits, the cost of building a multicultural multimedia project is relatively small. Given the congruence between multiple learning styles and cultural consonance, multimedia offers large potential gains in effective teaching practice.

Not only are we effectively using media to capitalize on cultural heritage, but also we are simultaneously tapping into several learning styles. Musical learners are absorbed in the music and sounds of the program. Linguistic learners engage by reading the text on the computer or projection screen. Logical learners tune into lessons by focusing on the use of technology components and the logical sequence of program steps in the framework inherent in the planning and construction of the media components (the "how

do you do that," response). Multimedia is so effective because most students have a combination of more than one type of preferred learning style.

It is important to address as many learning styles as is possible in each lesson plan. This is why multimedia is so effective. Multimedia is the use of a combination of text, graphics, sounds, music, animation and movies to promote more effective communication.

The new technology enhances understanding and is a wonderful tool for breaking down cultural stereotypes. All of us share multiple intelligences, and these can be utilized with multimedia. Multimedia can be incorporated into a single program, such as in the construction of a multimedia encyclopedia. Or, multimedia can be realized as the result of an integration of more than one type of medium, as in the case of using a computer program and a laser disc player. Put together with the **cultural capital** of children in the classroom, or persons in a school's surrounding community, multimedia is effective at helping all of us to realize the social wealth inherent in the cultural diversity in our nation.

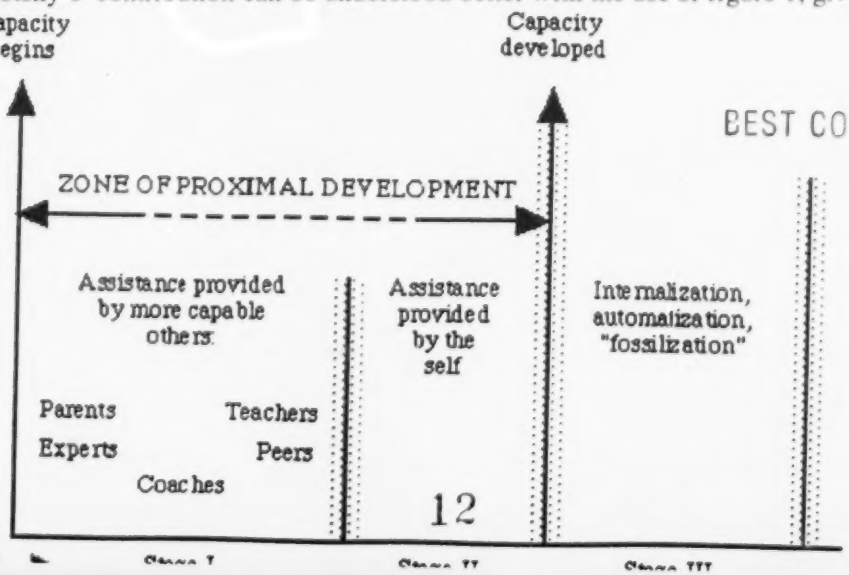
Knowledge Is Socially Constructed

The assumption that knowledge is socially constructed is grounded in essential understandings about human activity. First, we have come to realize that learning is primarily a social activity, especially in schools. According to Vygotsky (1962), all higher order psychological functions, including learning and problem solving, emerge first, on a social or interpersonal plane, and then later on an internal or intrapersonal plane.

Participation at the social or interpersonal plane involves social interaction between two or more people to coordinate activity face-to-face or at a distance. Often a more accomplished person provides guided assistance in the observation of, or hands-on involvement in an activity. This is the predominate form of learning in schools and other formal educational settings. Guided assistance not only includes deliberate instruction but also other tasks such as structuring the setting for learning and managing student's and teacher's roles during the lesson.

Participation on this plane also involves the transformation of individuals as a result of the social participation. Here the practices, knowledge, skills, attitudes, values, and beliefs of the social group are appropriated by individuals. In other words, students have experiences "outside" themselves that create experiences "inside" them. This process is often referred to as "appropriation" which is defined as the process by which individuals transform their understandings of and responsibility for activities through their own participation. Students also appropriate how tools such as language, measurement devices, materials, technology, multimedia, and rules are used, along with what kinds of problems and solutions are viewed as valuable.

Vygotsky's contribution can be understood better with the use of figure 1, given below:



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Another understanding mediated through the use of **new technology** is that learning and development are the outcomes of activity that is mediated with tools. Among the many tools that mediate learning activity in teacher education are books, computers, instructional strategies, telecommunications, and multimedia. These often are termed "primary tools": that is, they are physically evident in the environment in which we use them. A "primary tool" emerges with the conceptual knowledge necessary for its successful use; this conceptual knowledge is referred to as a "secondary tool." A major goal of teacher preparation is, therefore, the linking of useful primary tools with powerful secondary tools. In this context, language is the "tool of tools" (Vygotsky, 1962) which structures and welds together primary and secondary tools through social interaction. In this sense, human beings use language and other signs to regulate their own learning activity as well as that of others. So, there is a greater potential to expand the zone of proximal development as shown figure 1, by using technology to extent the zone of cultural consonance.

Finally, our view of teaching is that learning is the result of interactions among teacher, learner, and knowledge. From this view, the teacher is seen as co-active learner. Both teacher and learner try to transform information into knowledge which is meaningful, imaginative, and useful. Clearly, the focus on teaching and learning activity must be on the transformation of knowledge rather than solely on the acquisition and reproduction of facts. Critical inquiry--the ability to ask provocative questions and seek

out creative answers--must be valued and demanded by both teacher and learner. This shifts the classroom focus from simply the management of students and classrooms to a focus on the management of complex intellectual activity which may be shared by both teacher and learner. Learning the broad and complex body of knowledge about such an extensive yet loosely structured domain as teaching at first may appear to be an overwhelming task. However, the current literature, as well as the observation of both teaching and other complex activities, offers great insights into how individuals regularly acquire the knowledge necessary for effective performance.

Computers as a Gateway for the New Paradigm:

In the previous century, computers were basically patterned after the old paradigm. This paradigm is summarized by Edgar (1995) as follows:

Educational Pedagogy	**Computer Environment**
Content Centered	Centralized
Preprogrammed	Preprogrammed
Limited Access	Limited Access
Single Curriculum (WASP)	Centralized Databases
Developed and Managed by Teacher	Preprogrammed and Managed Centrally

With advent of low cost computers, the classroom can be transformed to one which adapts to diversity and increases student success:

Educational Pedagogy	**Computer Architecture**
Student Centered	Decentralized (surf the Web)
Student can program the computer	Individual can have input
Localized Student Groups can perform experimentaion as subject	PC affordability allows students to apply Media to new cultural areas
Culturally Consonant Curriculum	Web based access to culturally diverse communities in the virtual classroom
Two-way communication taking into account student difference/readiness for a subject at a certain time	Web providing all subjects through a single hookup
All learning is inherently Contextualized and Cross-cultural (in Social Space)	Indivisibility of the Web

It was pointed out by Whorf (1956) that one of the problems of those who are trained to think in European languages is that nouns tend to be substituted for verbs. There seems to be something about the subject-predicate-object structure of the sentence in English that inhibits us from taking activity as such. This lead to fossilization (as shown in Figure 1), or reification , that is, talking about processes as if they were things. The words "technology" and "values" are examples of this peculiar linguistic difficulty.

Hopefully, the dawning of the new century will bring us away from the rigidities of the Puritans, who spawned the leveling influence called "Americanization." Hopefully, we can deal effectively with global problems in a multicultural and truly pluralistic society. A first step in this direction is the recognition of the new possibilities for instruction brought about by the new technology. Similarly, it is hoped that we look upon technology, not as a thing, but as a process. Technology is a complex set of ways of doing things with both human and material instruments. The key to more open access lies in fostering the educational enterprise . It is no longer acceptable to view teaching as merely telling, learning as merely listening, and knowledge merely as facts, either in teacher preparation or public schooling. Instead, we believe that a more powerful conceptual view of teaching, learning, and teacher preparation is possible.

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